



**SX-4120**  
**SX-480**  
**Bedienungsanleitung**  
**Owner's Manual**

**SIGNUM SERIES**

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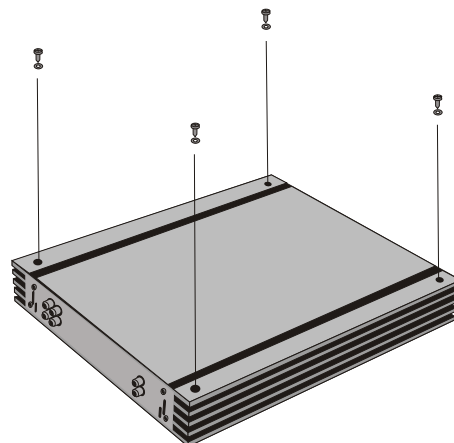


## General Installation Notes

The amplifier is generally mounted in the rear trunk area but can be mounted in any convenient area such as beneath a seat. Please be sure to locate this unit where you have reasonable air circulation and protection from moisture. When considering the mounting location you should minimize the length of the power and speaker leads. Minimizing both leads will yield a more reliable installation. It is also important to ensure that the heat sink fins are not against a panel or a surface, preventing air circulation. Do not install the amplifier on a subwoofer box or on vibrating parts of the vehicle, since the vibrations can cause damage to the amplifiers electrical components.

## Installation of the amplifier

Mark the location for the mounting screw holes by using the amplifier as a template. Drill holes at the marked locations and firmly fasten the amplifier in place with the mounting screws supplied in the accessory kit. Before drilling or cutting any holes, investigate the layout of your automobile thoroughly: Take care when working near the gas lines or hydraulic lines and electrical wiring.



## Electrical Connection

### Ground (GND)

This wire is the electrical ground and must be fastened securely to the vehicle chassis. The best method is to use a threading sheet metal screw since the threads cut into bare metal. Ensure that all paint or other insulation is removed from around the hole area, and using self tapping screw, securely affix the bare wire ends to the vehicle chassis. Use as short a piece of cable as possible - use the same gauge as was used for the +12V cable. Make sure that the connection is safe, a loose connection may result in amplifier noise and fault condition.

### Remote (REM)

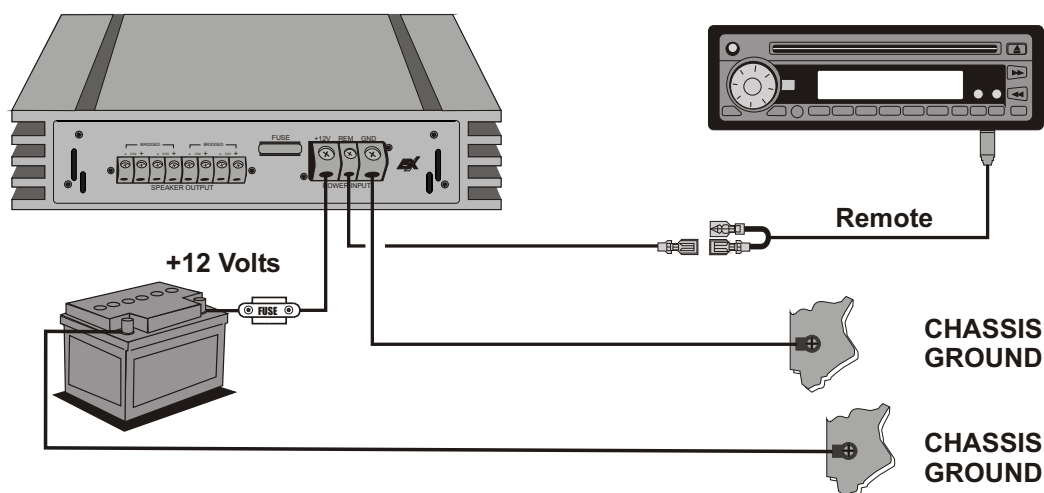
Many radios or other music sources have an output terminal for connection of the remote turn-on of the power amplifier. If a radio doesn't have a remote turn-on feature, then you can use the antenna relay wire, which activates the antenna motor. Please note, if the power antenna retracts when the radio is operating, then you cannot use the antenna relay wire to operate the remote turn-on.

### Battery Connection (+12V)

This wire is usually connected directly to the positive battery terminal. Ensure that the + power supply wire is fused via an assigned fuse in line with the + power supply wire. Please use a sufficient gauge for the installed amplifiers min 16-25 mm<sup>2</sup>. This connection must be completed using spade lug with insulating sleeve.

### Fuses

The integrated amplifier fuses protect the units from short circuit and overload. The fuse rating is for 4 Ohm loads (impedance) of the speakers, for 2 Ohm loads the fuses may have to get increased by up to 50% in case of higher power consumption.



# 4 Channel Amplifier - Features

## SX-480 / SX-4120

### LOW PASS

The built in low pass filter is fully variable from 30Hz up to 150Hz, with a rolloff of 12dB/octave

### HIGH PASS

The built in high pass filter is fully variable from 10Hz up to 1.2KHz, with a rolloff of 12dB/octave

### TWIN SUB - CH 1&2

When this Switch is set to ON Position the same adjusted parameters of CH 3 & 4 for High Pass, Low Pass and Bass Boost are taking effect on CH 1 & 2. Only the Input Level must be changed. This is only suitable for an operation with 2 Subwoofers.

### BASS BOOST

Allows you to adjust the bass boost from 0dB up to 12dB. Only for LP-Mode!

### INPUT LEVEL

This allows you to match the amplifier input sensitivity to the output level of the source (head unit) and is continuously variable between 0.2 up to 4 Volts.

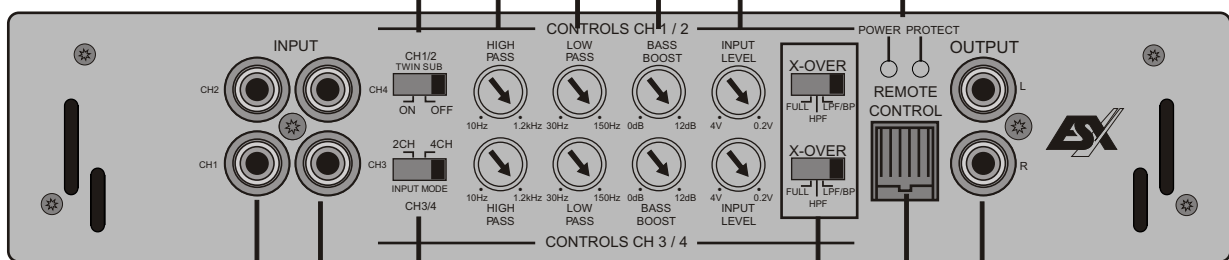
### POWER - LED

It indicates amplifier has turn on signal

### PROTECT - LED

It indicates the fault operation of the amplifier. When the fault conditions (overload, excessive heat or short circuit of speaker) arise, the protection curcuit is engaged to protect both the speakers and the amplifier against damage.

Look at page 9 Trouble Shooting!



### INPUT

Accepts line level (RCA) inputs from 0.2 to 4 Volts

### INPUT MODE SELECT

Allows you to choose between "2CH" or "4CH" line signal input.

### OUTPUT

Provides a full range line level (RCA) output that allows the use of additional amplifiers.

### REMOTE CONTROL

These jack are for use with the enclosed remote control. Only the low pass signal will be controlled.

### X-OVER SELECT

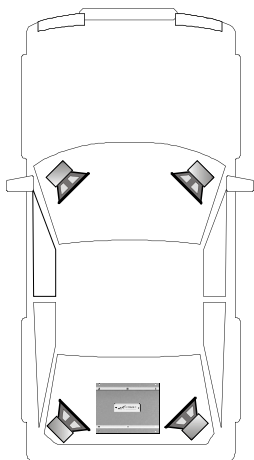
This switch will route the output of the full range (FULL), or a low pass (LP), or the output of the high pass (HP) filter to the internal power amplifier.

When this switch is set on LP the HP Control is activated as SubsonicFilter.

# 4 Channel Amplifier - Applications

## SX-480 / SX-4120

### 4-Channel Front-/Rear Speakers



#### Interconnect cable checklist:

- Connect the head unit line outputs with good quality RCA to RCA cables to the INPUT CH1&2 / CH3&4 of the amplifier.
- Connect the Front-/Rear Speakers with the terminal blocks (SPEAKER OUTPUT + CH1 - + CH2 -, + CH3 -, and + CH4 -) of the amplifier.
- The minimum final speaker impedance must not be below 2 Ohm per channel. Too low speaker loads result in too high heat dissipation and may cause the amplifier run into protection.
- Please observe speaker channel and polarity as printed by the speaker terminal block. Incorrect phasing of the speakers results in total loss of bass response.

#### Caution

**Be careful not to connect speaker (-) to the ground or vehicle chassis.**

### X-OVER SELECT (CH1/2 & CH3/4)

- If larger than 20 cm speakers are used, the FULL position is recommended.
- For all smaller speakers (Ø8.7cm - Ø16cm) the Highpass-Position (HP) is recommended, which eliminates the lowest frequencies and protects the speakers from damage. Set the crossover-frequency between 60Hz - 150Hz, depending of the size of the installed speakers. The Highpass adjustment can be done with the HIGH PASS - ADJUST control.

### INPUT LEVEL (CH1/2 & CH3/4)

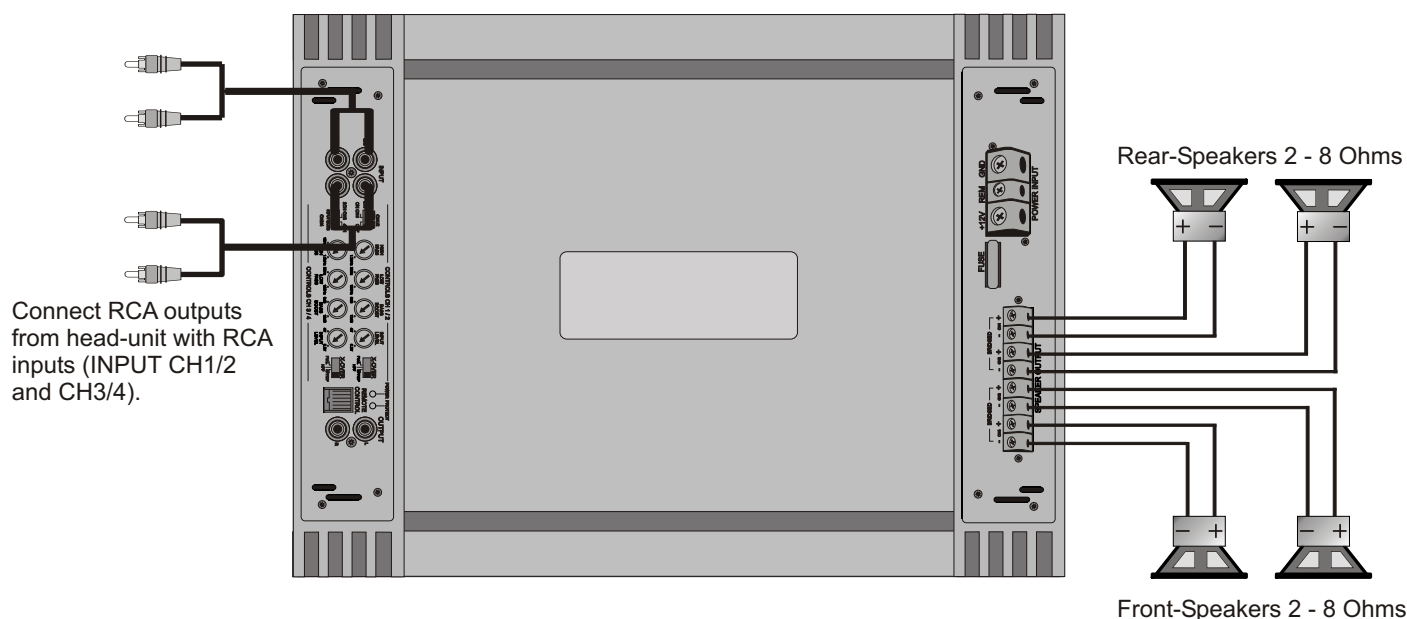
- Turn the INPUT LEVEL controls on the amplifier to 4V position.
- Turn the head unit volume control to about 80-90% of its full setting.
- Turn the INPUT LEVEL controls clockwise until you hear some distortion.
- Then turn back the INPUT LEVEL controls slightly until you can hear clean sound.

### BASS BOOST (CH1/2 & CH3/4)

- Turn the BASS BOOST control into "0dB" - position.

### MODE SELECT

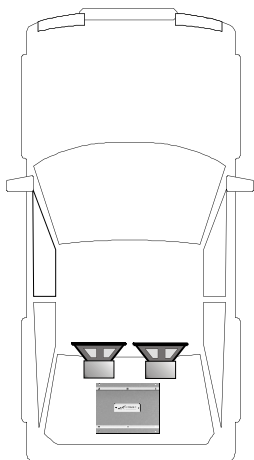
- The TWIN SUB - switch from CH1/CH2 must be in "OFF" - position and the MODE SELECT - switch from the CH3/CH4 must be in "4CH" - position. When you only use one RCA to RCA cable the INPUT MODE SELECT switch should be set on 2CH - position. The RCA to RCA cable must be connected with the input of CH1&2.



# 4 Channel Amplifier - Applications

## SX-480 / SX-4120

### 2-Channel/Mode TWIN SUB with 2 Subwoofers



#### Interconnect cable checklist:

- Connect the head unit line outputs with good quality RCA to RCA cables to the INPUT CH1&2 of the amplifier.
- Connect the Subwoofers with the terminal blocks (SPEAKER OUTPUT + BRIDGED - from Channel 1&2 and + BRIDGED - from Channel 3&4) of the amplifier.
- The minimum final speaker impedance must not be below 4 Ohm per channel pair. Too low speaker loads result in too high heat dissipation and may cause the amplifier run into protection.
- Please observe speaker channel and polarity as printed by the speaker terminal block. Incorrect phasing of the speakers results in total loss of bass response.

#### Caution

**Be careful not to connect speaker (-) to the ground or vehicle chassis.**

#### X-OVER SELECT (CH1/2 & CH3/4)

- In Mono/Subwoofer-Mode select the Lowpass-Position (LP), which eliminates the higher frequencies. The recommended crossover frequency ranges between 60 - 100Hz, depending on the size and response of the Subwoofers. The Lowpass adjustment CH3/4 can be done with the LOW PASS control. The HIGH PASS CH3/4 control works in this case as Subsonic Filter. The Cut-off frequency should be between 10Hz and 30Hz depending on the size of the installed Subwoofers. The HIGH PASS and LOW PASS on CH1/2 is in this mode without function.

#### INPUT LEVEL (CH1/2 & CH3/4)

- Turn the INPUT LEVEL controls on the amplifier to 4V position.
- Turn the head unit volume control to about 80-90% of its full setting.
- Turn the INPUT LEVEL controls clockwise until you hear some distortion.
- Then turn back the INPUT LEVEL controls slightly until you can hear clean sound.

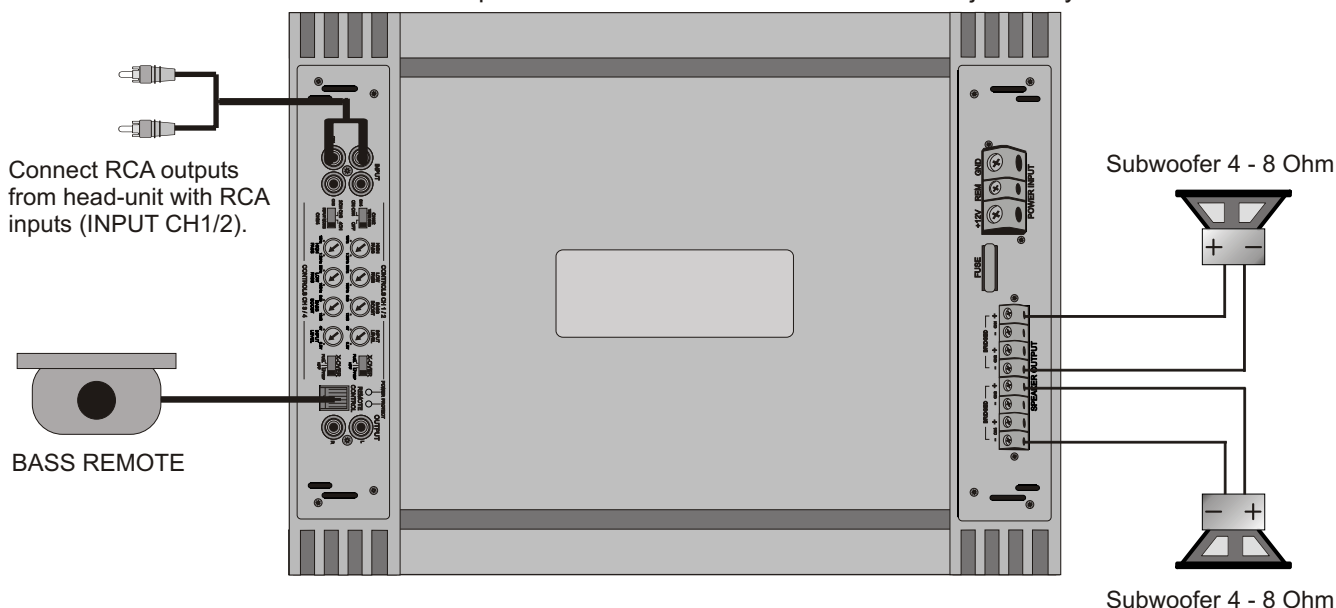
#### BASS BOOST (CH3/4) / BASS REMOTE

- The BASS BOOST-Control increases the bass level up to +12dB. BASS BOOST on CH1/2 is without function.
- With the BASS REMOTE you can also adjust the bass level from driver's seat.

**Caution!** Please use the BASS BOOST carefully. The additional boost may result in clipping or overload.

#### TWIN SUB / INPUT MODE SELECT

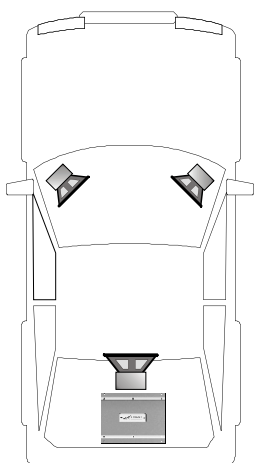
- The TWIN SUB - switch from CH1/2 must be in "ON" - position and the INPUT MODE SELECT - switch from the CH3/CH4 must be in "2CH" - position. Now both Subwoofers can be adjusted by the BASS REMOTE.



# 4 Channel Amplifier - Applications

## **SX-480 / SX-4120**

### 3-Channel-Mode with Stereo/Front-Speakers and Mono/Subwoofer



#### **Interconnect cable checklist:**

- Connect the head unit line outputs with good quality RCA to RCA cables to the INPUT CH1&2 / CH3&4 of the amplifier.
- Connect the Front Speakers with the terminal block (SPEAKER OUTPUT + CH1 - and + CH2 -) of the amplifier.
- Connect the Subwoofer with the terminal block (SPEAKER OUTPUT + BRIDGED - from Channel 3&4) of the amplifier.
- The minimum final speaker impedance must not be below 2 Ohms Stereo and 4 Ohms Mono. Too low speaker loads result in too high heat dissipation and may cause the amplifier run into protection.
- Please observe speaker channel and polarity as printed by the speaker terminal block. Incorrect phasing of the speakers results in total loss of bass response.

#### **Caution**

**Be careful not to connect speaker (-) to the ground or vehicle chassis.**

#### **X-OVER SELECT (Front Speakers CH1/2)**

- If larger than 20 cm speakers are used, the FULL position is recommended.
- For all smaller speakers (Ø8.7cm - Ø16cm) the Highpass-Position (HP) is recommended, which eliminates the lowest frequencies and protects the speakers from damage. Set the crossover-frequency between 60Hz - 150Hz, depending of the size of the installed speakers. The Highpass adjustment can be done with the HIGH PASS - ADJUST control.

#### **X-OVER SELECT (Subwoofer CH3/4)**

- In Mono/Subwoofer-Mode select the Lowpass-Position (LP), which eliminates the higher frequencies. The recommended crossover frequency ranges between 60 - 100Hz, depending on the size and response of the Subwoofer. The LOW PASS adjustment can be done with the LOW PASS - control. The HIGH PASS-Control is also activated as Subsonic Filter. The Cut-off frequency should be between 10Hz and 30Hz depending on the size of the installed Subwoofers.

#### **INPUT LEVEL (CH1/2 & CH3/4)**

- Turn the INPUT LEVEL controls on the amplifier to 4V position.
- Turn the head unit volume control to about 80-90% of its full setting.
- Turn the INPUT LEVEL controls clockwise until you hear some distortion.
- Then turn back the INPUT LEVEL controls slightly until you can hear clean sound.

#### **BASS BOOST (CH1/2 & CH3/4)**

- Turn the BASS BOOST control from the Front Speakers (CH1/2) into "0dB" - position.
- The BASS BOOST-control from the Subwoofer (CH3/4) increases the bass level up to +12dB.

**Caution!** Please use the Bass-Boost carefully. The additional boost may result in clipping or overload.

#### **BASS REMOTE**

- With the BASS REMOTE you can also adjust the bass level from driver's seat.

#### **INPUT MODE SELECT**

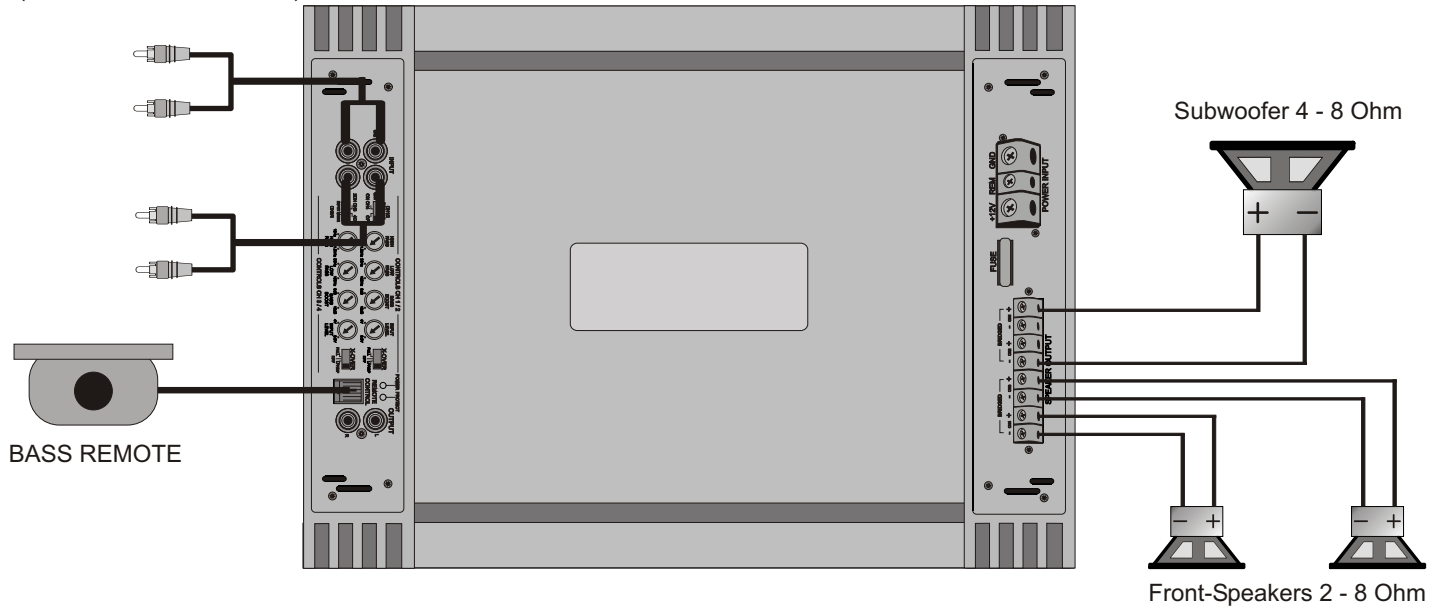
- The TWIN SUB - switch from CH1/CH2 must be in "OFF" - position and the INPUT MODE SELECT - switch from CH3/4 must be in "4CH" - position. When you only use one RCA to RCA cable the INPUT MODE SELECT switch should be set on 2CH - position. The RCA to RCA cable for the Line Input Signal must be connected with the INPUT of CH1&2.

# 4 Channel Amplifier - Applications

## **SX-480 / SX-4120**

### 3 Channel Mode with Stereo Front Speakers and Mono/Subwoofer

Connect RCA outputs from head-unit with RCA inputs (INPUT CH1/2 and CH3/4).





# **Trouble Shooting**

## **System does not turn on**

1. Check all fuses.
2. Check all connections.
3. Measure the +12 volt and remote turn on voltages at the amplifier terminals. If these are non existent or too low, take voltage measurements at fuse holders, distribution blocks, the head unit's +12 volt and remote leads to localize the problem.

## **Noise problems**

1. Check the speaker wiring
2. Speakers are damaged
3. In LP/BP Mode the HP Control is adjusted too high.

## **No Signal at Channels**

1. Set Balance and Fader from head unit on Zero-Position
2. Check wiring (Amplifier, Speakers)
3. Speakers are damaged

## **Hiss or white noise**

1. Speakers are overload
2. High levels of white noise usually occurs when amplifier level controls are turned up too high.
3. Another major problem that can cause excessive hiss, is a noisy head unit - unplug the amplifier input RCA cables, and if the hiss level reduces, the source unit is at fault.

## **No Stereo-Sound or Low Output**

1. Check speaker wiring (- and +)

## **Amplifier Protect-Mode (the Display lights up red)**

1. Speaker cables are shorted
2. Inadequate cooling - relocate or remount to provide better natural airflow. Driving high power levels into low impedances -back off on the volume control, and/or make sure you are not loading the amplifier with less than the recommended loudspeaker impedance.
3. Make sure that the battery voltage, as measured at the amplifier's +12 volt and ground terminals, is 11 volts or more.

## **Electrical interference**

The inside of an automobile is a very hostile electrical environment. The multitude of electrical systems, such as the ignition system, alternator, fuel pumps, air conditioners to mention just a few, create radiated electrical fields, as well as noise on the +12 volt supply and ground. Remember to isolate the problem - first unplug amplifier input RCA cables, if the noise is still present, check the speaker leads, if not, plug the RCA's back, and investigate the source driving the amplifier, one component at a time.

## **A ticking or whine that changes with engine RPM:**

1. This problem could be caused by radiation pickup of RCA cables too near to a fuel pump or a distributor, for instance, - relocate cables.
2. Check that the head unit ground is connected straight to the vehicle chassis, and does not use factory wiring for ground.
3. Try to supply the head unit with a clean +12 volt supply directly from the battery +, instead of using a supply from the in dash Wiring/fusebox. This type of noise can be more difficult to pinpoint, but is usually caused by some kind of instability, causing oscillations in the system.

## **A constant whine:**

1. Check all connections, especially for good grounds.
2. Make sure that no speaker leads are shorting to exposed metal on the vehicle chassis.
3. RCA cables are notorious for their problematic nature, so check that these are good, in particular the shield connections.

### **Caution!**

In your amplifier are protection circuits integrated. Short Circuit Protection engaged: The amplifier will turn off and try to come back on immediately. The amplifier will cycle like this indefinitely, with "blips" of sound each time. If this is the case, check your speakers and wiring for low impedance and short circuits. Thermal Protection engaged: The amplifier will turn off and several minutes later will come back on. In this case, ensure that there is nothing blocking the normal convective airflow of the amplifier. No obstruction should be within 5cm/ 2" of the amplifier on all sides.

NOTE: Low battery voltage will cause the amplifier to run warmer and possibly damage the amplifier.

# Specifications

|   | SX-480        | SX-4120       |
|---|---------------|---------------|
| <b>Channels</b>                                   | 4             | 4             |
| <b>Output Power Ratings at 14.4 Volts</b>         |               |               |
| Watts at 4 Ohms - RMS / MAX.                      | 4 x 80 / 140  | 4 x 120 / 200 |
| Watts at 2 Ohms - RMS / MAX.                      | 4 x 140 / 280 | 4 x 200 / 400 |
| <b>Output Power Ratings at 14.4 Volts bridged</b> |               |               |
| Watts at 4 Ohms - RMS                             | 2 x 280       | 2 x 400       |
| Watts at 4 Ohms - Max.                            | 2 x 560       | 2 x 800       |
| <b>Frequency response -3dB</b>                    | 20Hz - 30kHz  | 20Hz - 30kHz  |
| <b>Damping factor</b>                             | > 200         | > 200         |
| <b>Signal to noise ratio</b>                      | >90dB         | >90dB         |
| <b>Channel separation</b>                         | >74dB         | >74dB         |
| <b>THD &amp; N</b>                                | < 0.5%        | < 0.5%        |
| <b>Input Gain Control</b>                         | 0.2 - 5 Volt  | 0.2 - 5 Volt  |
| <b>Crossover Channel 1 &amp; 2</b>                |               |               |
| Full/Lowpass/Highpass                             | Full/LP-BP/HP | Full/LP-BP/HP |
| Variable Highpass Crossover 12 dB                 | 10Hz - 1.2KHz | 10Hz - 1.2KHz |
| Variable Lowpass Crossover 12 dB                  | 30Hz - 150Hz  | 30Hz - 150Hz  |
| BassBoost Control at 45Hz                         | 0dB - 12dB    | 0dB - 12dB    |
| <b>Crossover Channel 3 &amp; 4</b>                |               |               |
| Full/Lowpass/Highpass                             | Voll/LP-BP/HP | Voll/LP-BP/HP |
| Variable Highpass Crossover 12 dB                 | 10Hz - 1.2KHz | 10Hz - 1.2KHz |
| Variable Lowpass Crossover 12 dB                  | 30Hz - 150Hz  | 30Hz - 150Hz  |
| BassBoost Control at 45Hz                         | 0dB - 12dB    | 0dB - 12dB    |
| <b>RCA Line Outputs</b>                           | Fullrange     | Fullrange     |
| <b>Bass Remote Control</b>                        | yes           | yes           |
| <b>Fuses</b>                                      | 60 A Maxifuse | 80 A Maxifuse |
| <b>Heatsink size in mm</b>                        |               |               |
| Width x Height                                    | 282 x 50      | 282 x 50      |
| Length  | 320 / 350     | 400 / 430     |

\* All specifications subject to change without notice



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